ERGONOMICALLY DESIGNED KEYBOARD

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is in the field of data processing, and more specifically relates to a keyboard for data entry. The keyboard of the present invention converts the actuation of its various keys to electrical signals; it is not a part of any particular machine. However, it can be electrically connected to a typewriter, word processor, printer, computer or other device so that its electrical signals can be utilized to control the operation of such other devices.

2. The Prior Art

A detailed discussion of the prior art is contained in a Prior Art Statement that has been lodged in the Patent Office file of this application. Accordingly, only an abbreviated discussion will be presented here.

In one aspect of the present invention, the SHIFT key assigns alternative characters to only the character keys and not to the punctuation keys. In the prior art, it was common for the SHIFT key to affect all of the keys on the keyboard and to assign alternative characters to the punctuation keys.

Typically, the punctuation keys are located at some distance from the home keys, and most users find it difficult to strike the desired punctuation key with confidence. The present inventor recognized that the location of the punctuation keys imposes a burden on the user and that this burden should not be increased by adding the complication that the punctuation key has two alternative characters. In the present invention, each punctuation key includes only one character which remains unchanged regardless which mode the keyboard is in.

In another aspect of the invention, palm pads are provided and they serve both as hand rests and as operational keys. Two types of hand rest are known in the prior art. One kind is simply an actuator which is not intended to support a substantial part of the weight of the hand, but instead is pushed by the hand to effect some function. Another type of hand rest known in the prior art serves only to space the fingers from the proximity-actuated keys to avoid accidentally operating the keys. None of the hand rests found in the prior art are specifically shaped and contoured to fit the shape of the hand of the user, as is the case in the present invention.

In another aspect of the present invention, special keys are provided for the purpose of selectively altering the location of the writing position or cursor. These four keys are used respectively for controlling the motion of the cursor or writing position relative to the medium in the four directions: left, right, up, and down. Each of these keys is slidable in the direction that the key controls. No comparable cursor control system is known in the art.

In a fourth aspect of the invention, the palm pads that also serve as hand rests are used for operating the SHIFT. One earlier patent shows a shift key located under the palm of the left hand, but it is not usable by both hands and includes no provision for shift lock.

In a fifth aspect of the present invention a system of chording is used to input the 26 different characters of the English alphabet. Although chording has been used in some prior art keyboards, the particular scheme of chording used in the present invention is thought to be unique.

Thus, it appears that the present invention has a number of novel features which are not disclosed in the prior art. In the following section, these features will be discussed in greater detail.

SUMMARY OF THE INVENTION

The keyboard of the present invention makes maximum use of ergonomic principles to provide a keyboard that is uniquely efficient to use and easy to learn. This consistent application of ergonomic principles can be seen in each of the various aspects of the present invention.

A unique system of chording permits the fingers and thumbs to remain on the home keys for all the letters and numerals.

The punctuation keys are located immediately beyond the tips of the fingers in their home position, and the characters produced by the punctuation keys are not altered by shifting from lower case to upper case letters. This location of the punctuation keys assures that they will remain visible at all times (except when being struck).

A left palm pad and a right palm pad are provided and serve the dual purposes of supporting the hands and of serving as SHIFT keys. The surface of the palm pad is shaped and contoured to fit the proximal portion of the palm of the hand, so that the hand is supported comfortably and in a natural position.

The keyboard also includes four keys that, in addition to being depressable, are slidable in the plane of the face of the keyboard. Each of these four keys controls the motion of the writing position or cursor with respect to the medium in one of the four directions: left, right, up, and down. The direction in which the key is slid corresponds to the direction of motion of the writing position or cursor (with one exception).

When depressed, two of the four keys effect the TAB LEFT and the TAB RIGHT functions.

The remaining two of the four keys may be used, by depressing one and sliding the other, to effect the ERASE LEFT and ERASE RIGHT functions. The requirement that two keys be used simultaneously to activate these functions guards against accidental erasure.

In accordance with the present invention, the thumb, being the strongest and most versatile digit, is given the greatest individual workload, in contrast to conventional keyboards. The individual fingers leave their home positions only when it is necessary to strike a punctuation key. Even then, only one finger at a time is away from the home keys.

In designing the present keyboard, the inventor started with the hands themselves, in a natural, comfortable and highly functional position. Thereafter, a key and control layout was built up around the hands, taking into account their unique form and function, capitalizing on their strengths and avoiding their weaknesses. The resulting keyboard of the present invention is therefore uniquely natural and efficient, and quite easy to learn.

The novel features which are believed to be characteristic of the invention, both as to organization and method of operation, together with further objects and advantages thereof, will be better understood from the following description considered in connection with the accompanying drawings in which a preferred embodi-